

Application Serial No: 10/748,922
In reply to Office Action of 25 August 2005

Attorney Docket No. 84480

AMENDMENTS TO THE CLAIMS

1. (currently amended) A method of switching a binary digital signal having a discrete power level from a single input optical fiber to at least one output fiber comprising the steps of:

providing an input signal into an input optical fiber;

splitting said input signal ~~to form a plurality of repeatedly~~
in a binary fashion N times to produce 2^N split input
signals;

selectively amplifying at least one of said ~~plurality of said~~
 2^N split input signals with an amplifier; and

attenuating each of said ~~plurality of said~~ 2^N split input
signals after said step of selectively amplifying.

2. (canceled)

3. (original) The method of claim 1 wherein said selectively amplifying is accomplished through the use of a semiconductor optical amplifier.

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4. (original) The method of claim 1 wherein said selectively amplifying is accomplished through the use of an erbium doped optical fiber pumped by a laser.

5. (original) The method of claim 1 wherein said selectively amplifying is accomplished through the use of a controller.

6. (currently amended) The method of claim 1 wherein attenuating each of said plurality of said 2^N split input signals comprises filtering said split input signals.

7. (currently amended) The method of claim 1 wherein attenuating each of said plurality of said 2^N split input signals comprises the step of passing said split input signals through a partially opaque section of fiber.

8. (currently amended) A fiber optic switch comprising:

an input optical fiber capable of transmitting an input signal;

at least one splitter joined to said input optical fiber for splitting said input optical fiber ~~to form a plurality of~~ said at least one splitter arranged in a binary

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fashion N times to produce 2^N split optical fibers, each
of said split optical fibers being capable of carrying
said input signal;

at least one amplifier joined to each of said plurality of
said 2^N split optical fibers, each amplifier being
controllable to amplify the signal in the joined one of
the split optical fibers; and

at least one attenuator joined to each amplifier to attenuate
the signal in each of said plurality of said 2^N split
optical fibers.

9. (canceled)

10. (original) The switch of claim 8 wherein said at least one
amplifier is a semiconductor optical amplifier.

11. (original) The switch of claim 8 wherein said at least one
amplifier is an erbium doped optical fiber pumped by a laser.

12. (original) The switch of claim 8 further comprising a
controller joined to said at least one amplifier for selectively
controlling the joined amplifier.

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13. (original) The switch of claim 8 wherein said at least one attenuator is an optical filter.

14. (original) The switch of claim 8 wherein said at least one attenuator a partially opaque section of fiber.

15. (new) A method of switching a binary digital signal having one of two discrete power levels representing 0 and 1 from a single input optical fiber to at least one output fiber comprising the steps of:

providing an input signal, having a signal to noise ratio, into an input optical fiber;

splitting said input signal repeatedly in a binary fashion N times to produce 2^N split input signals;

selectively amplifying at least one of said 2^N split input signals by a magnitude equal to the signal to noise ratio of said input signal through the use of a laser activated amplifier comprised of an erbium doped optical fiber pumped by a laser; and

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attenuating each of said 2^N split input signals by an amount identical to the amount amplified by said laser activated amplifier after said step of selectively amplifying said at least one of said 2^N split input signals, such that each of said 2^N input signals that were not first amplified are now attenuated to a power level of 0.

16. (new) The method of claim 15 wherein the step of selectively amplifying at least one of said 2^N split input signals with a laser activated amplifier comprised of an erbium doped optical fiber pumped by a laser, comprises amplifying said at least one of said 2^N input signals by a magnitude greater than the signal to noise ratio of said input signal

17. (new) The method of claim 15 further comprising the step of delivering a control signal to said laser activated amplifier by means of a controller to amplify said at least one of said 2^N input signals.

18. (new) The method of claim 17 further comprising the steps of establishing said two discrete power levels at 0 mw to 1 mw representing a 0 and at 3 mw to 4 mw representing a 1.

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19. (new) The method of claim 18 wherein the step of selectively amplifying at least one of said plurality of said 2^N split input signals with a laser activated amplifier comprising an erbium doped optical fiber pumped by a laser, further comprises amplifying said at least one of said 2^N input signals by a factor of 10.

20. (new) The method of claim 19 wherein the step of attenuating each of said 2^N split input signals by an amount identical to the amount amplified by said laser activated amplifier after said step of selectively amplifying said at least one of said 2^N input signals further comprises attenuating each of said split input signals by a factor of 10.